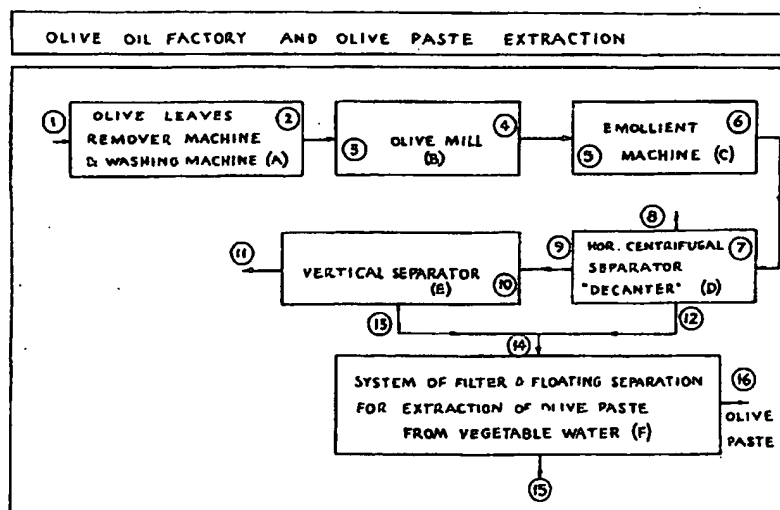




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(54) Title: METHOD OF EXTRACTION OF OLIVE PASTE FROM VEGETABLE WATER AND ITS USE AS A FOODSTUFF



(57) Abstract

The olive paste is a by-product of olives and is extracted from the vegetable water, the latter being up to now treated as liquid waste in olive oil factories. The density of olive paste within vegetable water is 3-5 % and the former is in the form of floating solid particles. The above method is the result of several procedures of extraction and culminates into an edible product, not a by-product anymore considered hazardous for the environment. The aforementioned foodstuff product is of high nutritional value. It is the result of a very simple process and it is readily mixable with other edible products.

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METHOD OF EXTRACTION
OF OLIVE PASTE FROM VEGETABLE WATER
AND ITS USE AS A FOODSTUFF

The present invention concerns the use of an olive by
5 product, contained in the form of floating particles in a
percentage of 3-5% within the liquid wastes of horizontal and
vertical olive oil factory separators, as a foodstuff.

To the best of our knowledge, such a method as the above
does not exist up to the present, a proof of which is the fact that
10 olive oil producers get rid of the liquid wastes instead of utilizing
them for the production of an edible product. Such wasting of this
liquid mass results not only into the loss of a very valuable
product, but to the contribution of heavy environmental pollution
as well.

15 The present method achieves the extraction of olive paste
from those liquid wastes in such a way that it converts a by
product into a product of high nutritional value and furthermore
it eliminates a serious problem of uncontrollable pollution.

These liquid wastes are a serious concern for olive oil
20 producers primarily because the final recipients are rivers and the
sea.

The advantages of this innovative method are the
generation of an additional income, as well as the simplification
and improvement of the further process stages for neutralization
25 of the liquid waste and adsorption by nature. Olive paste may be
produced within any centrifugal olive oil factory system.

Figure 1 is a schematic of an olive oil factory. Olives enter
the olive leaves remover and washing machines **A** at point **1** where
the leaves are removed and the fruit are washed. Subsequently
30 the olives exit at point **2** and enter point **3** of the olive mill **B**
where they exit from point **4** and enter through point **5** of the
emollient machine **C** in pulp form. Following the emollescence, the

pulp mass exits point 6 entering point 7 of the horizontal centrifugal separator, «decanter» D. This decanter is a three phase device because it separates the olive pulp into its three constituents via centrifuging: olive oil, vegetable water and oil
5 kernel. Each one of the above constituents leaves the decanter from point 9, point 12 and point 8, respectively, in a continuous flow. The oil enters the vertical separator E at point 10 for extra purification. This results in the production of pure oil at point 11.

Subsequently, vegetable water leaves both the horizontal
10 and vertical centrifugal separators at points 12 and 13, respectively, culminating into a system F of filter and floating separation for extraction of olive paste from vegetable water. Such a separation can be achieved through filtering, sinking tanks and centrifuging independently or in conjunction with one
15 another. Vegetable water exits through point 15 for further neutralization in subsequent process stages. Olive paste is extracted through point 16 and can be transported for further processing at standard production plants.

CLAIMS

1. Method of extraction of olive paste from vegetable water found in olive oil factories characterized in that an edible paste is produced which is of nutritional value.
- 5 2. Method of extraction of olive paste from vegetable water found in olive oil factories as claimed in Claim 1, characterized in that prior to reaching the waste draining stage and immediately after exiting the centrifuging stage of olive oil factories, the olive floating particles are separated from waste fluids through
10 filtering, sinking tanks and centrifuging independently, or in conjunction with one another.

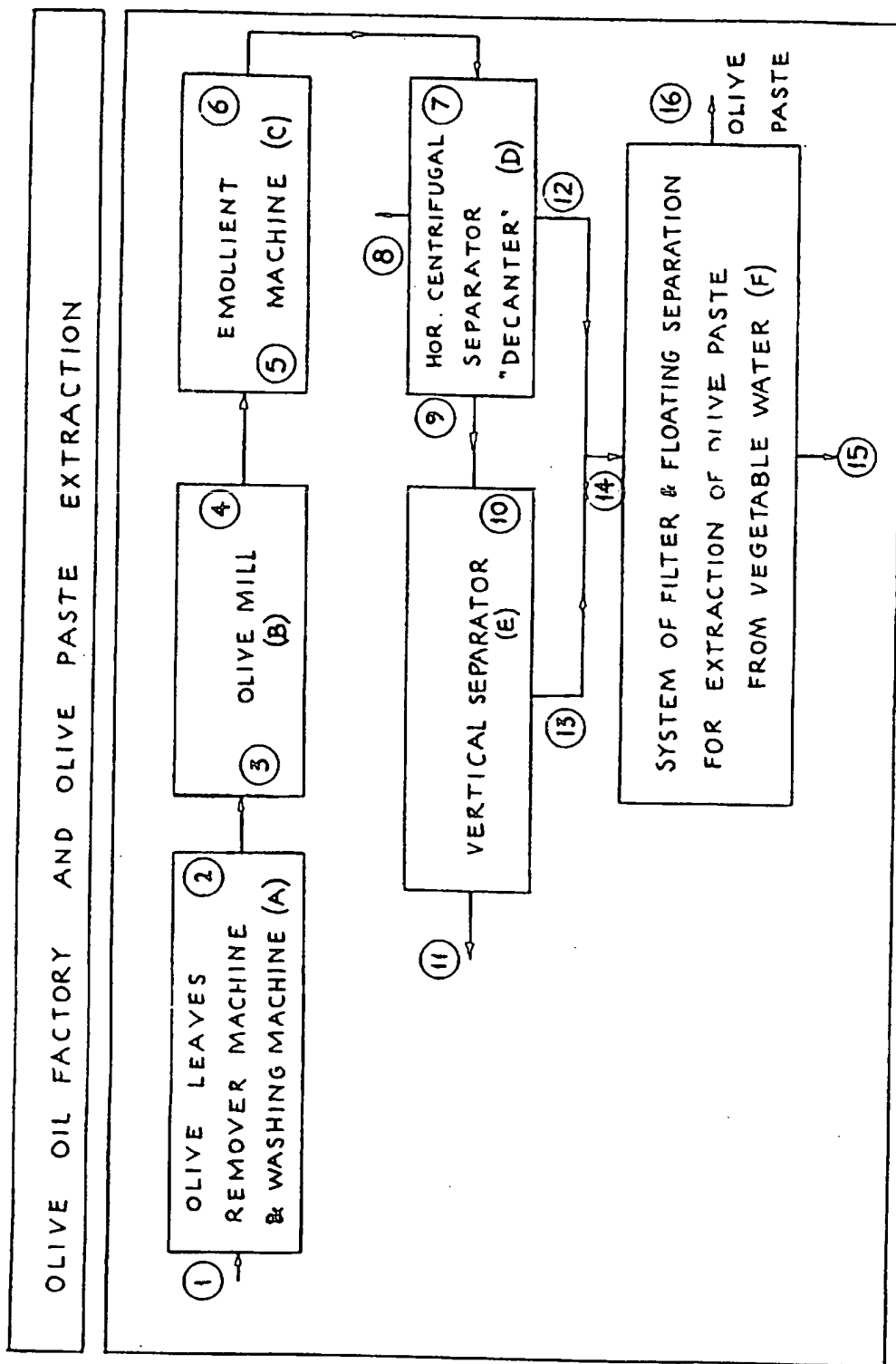


FIGURE 1

INTERNATIONAL SEARCH REPORT

International Application No
PCT/GR 96/00002

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 C02F1/00 C11B13/00 A23L1/212

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A23L C11B C02F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 370 274 A (FINCH HARVEY E ET AL) 25 January 1983 see figure 1 see column 4, line 10 - column 5, line 26 ---	1,2
X	WO 92 11206 A (TICON VVS A S) 9 July 1992 see page 1, line 1 - page 3, line 18 see page 4, line 15 - page 7, line 30 see page 13, line 25 - line 33 ---	1,2
X	EP 0 686 353 A (FLOTTWEG GMBH) 13 December 1995 see figures see column 6, line 13 - column 8, line 26 --- -/--	1,2

☒ Further documents are listed in the continuation of box C.

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Date of the actual completion of the international search

27 September 1996

Date of mailing of the international search report

09.10.1997

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INTERNATIONAL SEARCH REPORT

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PCT/GR 96/00002

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 295 722 A (BRICCOLI BATI HERMINE ;BRICCOLI BATI SYLVIA (IT); BRICCOLI BATI CA) 21 December 1988 see the whole document ---	1,2
X	DATABASE CHEMABS CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US Abstract Number 94:119738, XP002014464 see abstract & BULL. LIAISON - GROUPE POLYPHENOLS, no. 9, 1980, pages 56-61, ---	1,2
X	DATABASE CHEMABS CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US AN 92:220405, XP002014465 see abstract & OLI, GRASSI, DERIV., vol. 16, no. 1, 1980, pages 2 -4, ---	1,2
X	DATABASE WPI Week 9550 1995 Derwent Publications Ltd., London, GB; AN 95-384483 XP002014466 & ES 2 076 899 A (FUENTES CARDONA SA) , 1 November 1995 see abstract ---	1,2
X	DATABASE WPI Week 9550 1995 Derwent Publications Ltd., London, GB; AN 95-384482 XP002014467 & ES 2 076 898 A (SOC. COOP. AGRIC. ANDALUZA VIRGEN DEL CASTI) , 1 November 1995 see abstract ---	1,2
X	DATABASE WPI Week 9004 1990 Derwent Publications Ltd., London, GB; AN 90-024640 XP002014468 & ES 2 010 278 A (ABELA DOMINGUEZ) , 1 November 1989 see abstract ---	1,2

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/GR 96/00002

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE WPI Week 8647 1986 Derwent Publications Ltd., London, GB; AN 86-306945 XP002014469 & ES 8 605 693 A (J.S.JIMENEZ) , 16 September 1986 see abstract</p> <p>---</p>	1,2
X	<p>DATABASE WPI Week 9005 1990 Derwent Publications Ltd., London, GB; AN 90-031750 XP002014470 & ES 2 010 535 A (F.JORQUERA) , 16 November 1989 see abstract</p> <p>---</p>	1,2
E	<p>EP 0 718 397 A (TRATAMIENTO INTEGRAL DE ALPECH) 26 June 1996 see the whole document</p> <p>-----</p>	1,2

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A-4370274	25-01-83	US-A- 4452744 US-A- 4522119	05-06-84 11-06-85
WO-A-9211206	09-07-92	NONE	
EP-A-0686353	13-12-95	NONE	
EP-A-0295722	21-12-88	DE-A- 3720408	29-12-88
EP-A-0718397	26-06-96	ES-A- 2084564	01-05-96